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ANDROID BASED INTELLIGENT E-RESTAURANT ORDERING SYSTEM

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ABSTRACT

Over the years, technology has tremendously revolutionized the restaurant industry. Standard of living of people has also improved. Now more and more people are willing to spend money on food in restaurants, because of which competition in the catering industry is becoming increasingly intense. This increases the need of proper management into the restaurant system. This paper is about orders made by the customers will be instantly reach the kitchen module. Android based application is user-friendly, improves efficiency and accuracy for restaurants by saving time, reduces human errors. Also A Hardware system through which the user can order the food like normal restaurant system. For this using ARM7 microcontroller and a Matrix keyboard to choose the food. The food menu will be displayed on the LCD screen of microcontroller. When the user chooses the food an Ordered Item list will be displayed on LCD with the Bill amount. This system increases quality and speed of service.

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KEYWORDS: Android, ordering, restaurant, table unit, reception unit.

I. Introduction

Similar to a computer, a mobile operating system provides the primary execution environment for applications on the phone. Analogous to programs on a PC, apps can be downloaded and installed on mobile phones. Because of the growing general purpose computing capabilities of mobile devices, combined with their increasing popularity and adoption rate, it is expected that hand-held mobile phones will become the next PC. These technology trends have enabled innovative, exciting and compelling mobile applications to become widely available, from gaming to multimedia to social networking. Hand-in-hand with the growth of the raw computing power of mobile phones, various middleware/OS platforms have evolved that allow developers to take advantage of the computing resources to create feature-rich applications that provide compelling user interfaces and functionality.

Restaurant is a place where people pay to sit and eat meals that are cooked and served on the premises. In traditional restaurant system orders are taken by a waiter and they bring the food when it is ready. After eating the food customers will pay the bill. This system relies on large numbers of manpower to handle customer reservation, inquiry about them, ordering food, placing order on table, reminding dishes of customer.

Therefore, how to effectively improve the service quality for customers by using advanced technologies has received much attention in recent years. “Intelligent Restaurant” it's all about getting all of your different touch-points working together connected, sharing information, personalizing experiences and speeding processes.

This system replacing pen-paper which is used by waiter to take an order. In this Intelligent Restaurant a Graphical User Interface (GUI) programmed by embedded c is used as a food ordering system. It is requiring customer to order via LCD device that placed on each table in the restaurant. Customers view the menu, price and make an order directly using this touch screen system. Then, their order will be sent to the database in cash counter computer and also viewed on the computer screen at the kitchen for food preparation.

II. Literature Survey

Pen and paper based traditional system is the simplest and the most widely used system even today. In this system, every time a customer enters the restaurant and occupies his table, a waiter comes at his table and presents him a menu card, with the record of food-items. Waiter then waits with a notepad and a pen to take down the customer's order. The waiter then notes down the order of the customer in his notepad and the record is stored in the paper. Although the food ordering process in this system is very easy, there are many drawbacks in this system.

"TPIR" is designed to overcome “Traditional paper based system” problem .By using "tablet PC", the customer can send orders to the cooking room and cashier in a fast and easy way. TSIR can also give customer feedback to restaurant staff. The methodology that has been used in this project is based on wireless communication (Wi-Fi). This system is developed by using (visual basic 6.0 and SQL server 2000).This system makes the food ordering process easier. This system, implements wireless data access to SQL server. The Windows 7 application on customer tablet pc will have all the menu details. The restaurant manager can manage the menu modifications easily, via adding and removing items..[1]Touch Based Digital Ordering System on Android using GSM and Bluetooth for Restaurants is an automated system that uses wireless communication, a centralized database, and an android application to place the order without even waiting for a waiter.The android application installed in the touch screen device, fitted at the table, contains all the menu details with pictures of each item. The ordered details are wirelessly sent to the chef and the cashier. The manager has his own android application that is used to update the menu that updates the central database, view and manage table wise customers' orders, and receive feedbacks from the customer..[2]The e-commerce on-line catering reserving and ordering system was developed on the basis of android platform and SDK, with Eclipse IDE in the wireless communication environment.[3] The Self-Service Restaurant Ordering System (SROS) developed a Graphical User Interface (GUI) using a Microsoft Visual Studio 2008 and Microsoft Office Access 2007 for the database. It is requiring customer to order via touch screen device that placed on each table in the restaurant. Customers are able to view the menu, price and make an order directly using the system. Then, their order will be sent to the database in restaurant and will be view on the computer screen at the kitchen for food preparation.[4] This paper proposes the system eventually leads to replacement of all the menu cards with the new one, which would lead to a great wastage of papers. The android application implemented makes customers at distance from restaurant easier to order and receives confirmation sms about the order through GSM. On the restaurant server has Visual basic software which will receive the order and process it. As soon as the order is ready a confirmation SMS will be sent to the user that the Food is ready to deliver with the total Bill amount. Also a Hardware system through which the user can order the food like normal restaurant system, which rectifies mistakes and also for future reference and improve working of restaurant.

III. System Architecture

The restaurant server accompanied with the ARM7 microcontroller as shown in Fig. 1 interfaced with PC with GSM module for kitchen section. A device loaded with an android supporting application containing food menu details at that restaurant. All the above mentioned digital components such as PC, Microcontroller, an another android phone (with enabled mobile data or wireless network on) Some steps are mentioned here to understand the working of the system easily: Restaurant base station server system should be powered on. Enable the Wi-Fi or mobile data on Smartphone/tablet on which one wish visualize the E- menu card. As we tap to open the application that we have designed for menu details. After entering the valid credentials presented with the screen in that Smartphone/tablet containing the menus in the restaurant. User may tap on the image that they want to order. After clicking on, command will go to microcontroller through GSM. The microcontroller dumped with an embedded C coding containing all the details regarding menu. Eventually it will command to the LCD to display the corresponding order on it at the kitchen section.

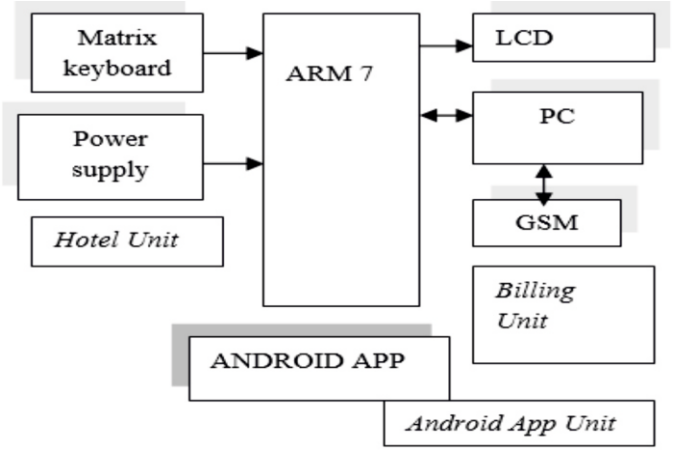

Fig. 1 Block Diagram

The components used to make this system are:-

Android Operating System: Android is a Linux-based operating system designed primarily for touchscreen mobile devices such as smartphones and tablet computers. It is an open source operating system and supports a number of devices. It has a very large user base. Even from developer point of view it is cheaper than other popular mobile operating systems like IOS.

GSM: GSM is used as a means of wireless communication in the proposed system. It is preferable over other wireless communication like Zigbee because it has less cost, improved quality performance, high range, and reliability.GSM has range of 1000+ meters. GSM is also a better choice over RF communication because when more than 3RF modules serve in the same area, none of them works,whereas, this is not the case with GSM module.

LCD: It is Liquid Crystal Display. There are different types of LCD in the market. In the proposed system, LCD is used to display the orders along with the table number to the chef; so, it should be big enough to accommodate the textual information of the order on the screen.

Visual Basic: The whole system was built using the Microsoft visual basic 6.0. Through Visual basic Environment we can build or design interfaces, through which the interfaces can users, used it, The customer orders are collected on which was designed by visual basic (VB 6.0) in a user friendly way, and by utilizing the user interface tools of VB.

IV. Methodology

Android app is designed using B4A software and customer can give order from this application once installed on android phone. This is the screenshot of Android phone of version 4.4.4 , from which order can be placed. Hotel no. is the sim card number placed in GSM module so that the order is sent to that number. GSM module is in restaurant. Orders are selected from menu on the left and quantity is added. When order is fixed "send" is clicked to send the order. As shown in Fig.2

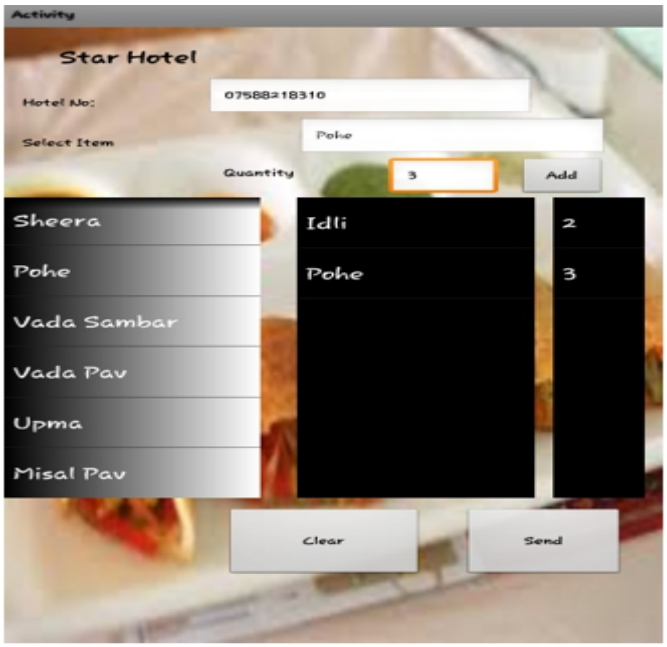

Fig. 2 Android App

This order will be received by GSM module connected to PC implemented with VB software. It will display the contact number of sim card in android phone, from which the order is received. There is tab of "Order Ready" when clicked, it will send a sms to Android phone that order is ready to pick up. "Table 1" is display window for order received from individual table with controller and LCD interfacing circuitry. Total amount bill is also calculated. As shown in Fig.3

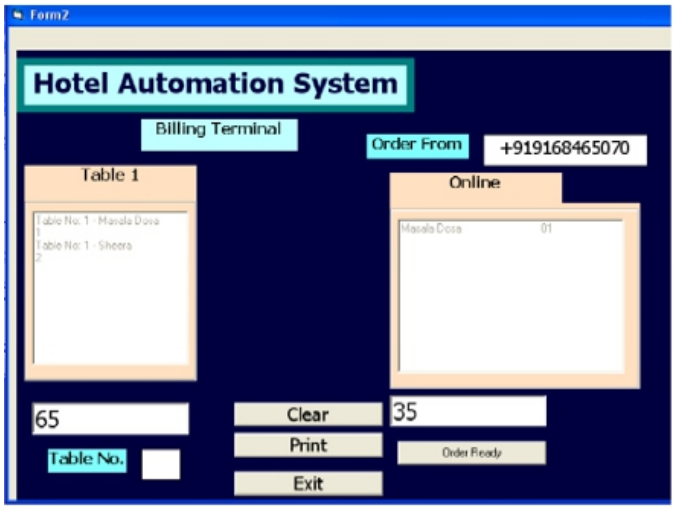

Fig. 3 Billing Unit

Also there is table unit having LCD ordering system in Fig.4 LCD is interfaced with Microcontroller circuit. It has four keys for "UP", "DOWN", "ENTER", "CANCEL", controls LCD cursor movement and selection of order.

The design is simulated by providing reset, clock and inputs. Part of the system are LCD ,power supply, Rs232.

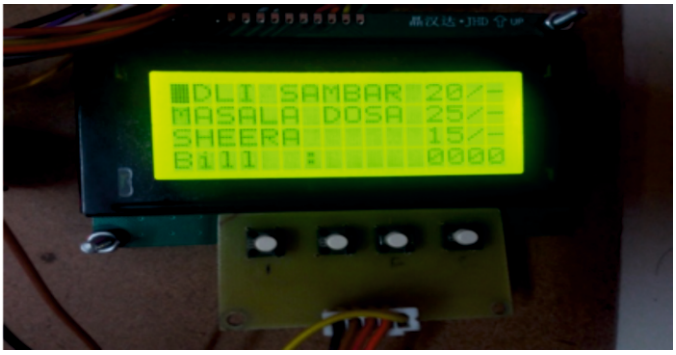

Fig. 4 Hotel Unit

V. Conclusion

In this paper, we proposed Android based e-restaurant ordering system. It helps in reducing pitfalls due to traditional restaurant system. It is more efficient than systems built on communication through Bluetooth and less costly than zigbee, etc.

A visual basic interface on PC which is reception unit, gets orders from - Set-up of LCD, microcontroller, keyboard which is considered as table unit. In live restaurant application, this individual set-up can be placed on individual tables. .Android app which is designed using Basic4Android software , appeared as menu and sending of order through GSM already in Android phone. It helps customers at distance to order. In conclusion, the system is very suitable in a real time to give more benefit to the business.

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